

Assessment of Knowledge, Attitude and Practice on Rabies in and Around Debretabor, South Gondar, Northwest Ethiopia

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Abstract: This study was conducted in and around Debre Tabor Town, South Gondar, Northwest Ethiopia from November, 2014 to April, 2015 to assess the knowledge, attitudes and practices (KAP) of the community on rabies and associated risk factors. A cross-sectional study design and multistage sampling procedures were employed to select households for this study. Administrative areas were randomly selected from the town. Kebeles were selected using lottery method from list of kebeles in each administrative area, followed by selection of households from each kebele using systematic random sampling method. The data were collected from 384 households through face to face interview using pretested and structured questionnaires. Out of the 384 respondents interviewed, 53.9% of them were males and 46.1% females. The majority of the respondents 75.5% were Orthodox followed by Muslim 15.6%. All of the respondents indicated that they had previously heard about rabies. Almost half of the study participants 49.5% had good level of KAP. There was strong association between KAP scores and age ($\chi^2=8.001$, $p<0.05$); educational level ($\chi^2=11.409$, $p<0.05$) and occupation ($\chi^2=14.307$, $p<0.05$). Generally these findings indicate that the Debre Tabor community has good knowledge about rabies. But it need for educational outreach in Debre Tabor Town to raise accurate knowledge on mode of transmission, symptoms and appropriate prevention and treatment measures.

Key words: Attitude • Community • Knowledge • Practice • Rabies

INTRODUCTION

Rabies is a viral zoonosis and human infection usually occurs following a transdermal bite or scratch by an infected animal [1]. Etiologic agent of this disease is the rabies virus belonging to the genus *Lyssavirus* and family Rhabdoviridae and the clinical signs include sudden behavioral change, hypersalivation, paralysis, hydro and phobia, restlessness, aggressiveness and biting inanimate objects [2]. Globally, human mortality from endemic canine rabies was estimated to be 55,000 deaths per year and 56% of the estimated deaths occur in Asia and 44% in Africa [3]. About 98 % of the human rabies cases occur in Developing countries that possess large number of dogs, many of which are stray [4].

In Ethiopia, rabies is an important disease that has been recognized for many centuries [5]. Nationwide data on rabies are not available to reveal the actual magnitude of the problem. However, the

distribution of vaccine to the various regions and the fragmented reports on human and animal rabies cases are strong indicators of the wide spread nature of the disease in the country [6]. The magnitude of the problem is higher in big cities like Addis Ababa linked with the presence of large population of stray dogs and associated factors [7, 8].

Different studies showed that rabies had been well established and become endemic in different part of Ethiopia [8,9]. It has been supported by high number of animal rabies confirmed cases in Addis Abeba during the past two decades and majority of rabies cases were confirmed in dogs. [6, 7, 9, 10].

Poor public awareness towards rabies is considered as one of the bottle necks for the prevention and control of the disease in Ethiopia especially in canine rabies endemic cities like Debretabor. Understanding communities' perceptions of cause, mode of transmission, symptoms, treatment and possible intervention measures of rabies is an important step towards developing

strategies aimed at controlling the disease and determining the level of implementation of planned activities in the future. Therefore, this study was designed to assess the level of knowledge, attitude and practices of selected communities in Debrerabor on prevention and control of rabies.

The objectives of this study are;

- To assess the level of knowledge, attitude and practices of selected communities in Debretabor town, South Gondar, Northwest Ethiopia.
- To identify factors associated with community knowledge, attitude and practice about rabies in the study area.

MATERIALS AND METHODES

Study Area: A study was conducted at Debre Tabor Town and it is located in South Gondar zone Amhara regional state, Debra Tabor is a Town and a woreda in north-central Ethiopia, located in the South Gondar Zone of the Amhara Region of Ethiopia, about 100 kilometers southeast of Gondar and 50 kilometers east of Lake Tana. The town has a latitude and longitude of 11°51'N 38°1'E 11.850°N 38.017°E with an elevation of 2,706 meters (8,878 ft) above sea level. The presence of at least 48 springs in the area contributed to the development of Debre Tabor. Based on 2007 national census conducted by the central statistical agency of Ethiopia, this town has a total population of 55,596 of whom 27,644 are men and 27,952 women. The climate is warm and temperate. In winter there is much less rain fall than in summer. The average annual temperature is 15 °C. The average annual rain fall is 1497 mm [11].

Study Population: Community of Debre Tabor town lives in 4 urban and 4 peri-urban kebeles. A total of 422 people were selected from those communities live in and around Debre Tabor Town with 10% non-response rate in which 38 respondents were rejected due to incomplete answer. The human population includes both urban and peri-urban community. Community of all age groups and both sexes were asked.

Sampling Design: Community based cross-sectional quantitative study design was used to assess the knowledge, attitudes and practices (KAP) on rabies and associated factors among the community of Debre Tabor Town, South Gondar, Northwest Ethiopia from November, 2014 to April, 2015.

Sample Determination: The required sample size for this study was estimated by considering 50% of population knowing about rabies since there is no awareness study on rabies in the area before. Thus, the sample size was calculated according to [12] using 95% confidence interval and 0.05 absolute precision. This is calculated by using the following formula:

$$n = \frac{1.96^2 \times p_{exp} (1 - p_{exp})}{d^2}$$

Where,

n= required sample size.

P_{exp} = Expected proportion of population

d²= Desired absolute precision (0.05).

As a result, 384 study population was selected, 10% non-response rate,

Total sample size = 384 subjects.

Sampling Procedures: A multi-stage sampling technique was employee for the selection of the sampling units. From the entire primary sampling unit, 4 administrative areas, 2 were selected by simple random sampling technique. Kebeles were selected from each administrative area by lottery method. The number of households to be included in each administrative area was determined by proportional allocation based on the total number of households found in each kebele. From the entire tertiary sampling unit, individual household, in the selected kebeles was selected using a systematic random sampling technique. From each selected household was further selected by simple random sampling technique and interviewed. A pretested structured questionnaire consisting of closed ended questions was used for this study. The data were collected via interview. The questionnaire was first developed in English and then translated in to Amharic language (native language) for appropriateness and easiness in approaching the study participants.

Data Analysis: After collecting, the data was cleaned and checked for its completeness. Those incomplete and inconsistent were corrected when possible and removed otherwise. After complete check-up the data was coded and entered to Microsoft Excel and imported to SPSS version 16.0 for analysis. The frequency distribution of both dependent and independent variables were worked out by using descriptive statics techniques (frequencies, mean, SD and percentage). Association between independent variables and KAP scores on rabies was assessed using Pearson's Chi square (X²).

RESULTS

Socio-Demographic Characteristics: A total of 384 respondents were responded to the questioner, which yields a response rate of 90.9%. More than half (53.9%) of the interviewed were males. Regarding age group, 56.0% of the study participants were between 15-35 years old. The majority of the respondents were Orthodox (75.5%) followed by Muslim (15.6%) and others (8.9%). Concerning educational status, 26.6% of the participants were secondary school (26.6%) followed by higher education (25.5%). The majority of the respondents were farmers and students (34.9%) followed by government employees (27.1%). All of the respondents heard information about rabies from informal sources, such as traditional healers, neighbors, friends and relatives and from formal (Radio/Television, Books/magazines) (Table 1).

Knowledge of Participants Related to Cause, Mode of Transmissions and Host Range of Rabies: All respondents were familiar with the disease and gave it slightly different local names (e.g. 'Kelebat', 'Likefit', 'Yebed wusha beshita'). Of those respondents, 65.1% were know that virus is the cause of rabies, 91.1% were know that rabies transmitted from animal to human and, 72.9% were aware that dog is the most common source of rabies followed by equine 10.4% (Table 2).

Knowledge of Participants Related to Clinical Signs and Fatal Nature of Rabies: 63.8% of study participants answered that rabies is a dangerous and fatal disease. About 36.5% and 3.4% of respondents were identified that sudden behavioral change, aggressiveness, hyper salivation, water phobia, paralysis and aggressiveness is sign of rabies in an infected animals, respectively. 27.6% of respondents were answered that hyper salivation are symptoms in a rabid animals. While 10.9% of respondents were mentioned that paralysis is one of the symptoms.

Practices and Attitudes to Prevent Rabies after Suspected Animal/dog Bite: 25.0% of the respondents washed the wound with water and soap immediately, 37.5% seek health center, 40.6% had positive attitude for traditional healer, 32.8% were aware of eating roasted meat of animal died of rabies could be medicine for rabies and 51.0% believed that only animal bite need vaccination. 47.4% of the respondent believed that post exposure prophylaxis can prevent rabies development.

Table 1: Socio-demographic information of the study participants in DebreTabor town (N= 384), 2015

Socio-demographic characteristics	Frequency	Percent
Sex		
Male	207	53.9
Female	177	46.1
Age		
15-35	215	56.0
36-55	85	22.1
56-75	70	18.2
>75	14	3.6
Educational status		
Literate people cannot read and write	38	9.9
Read and write	50	13.0
Primary school	96	25.0
Secondary school	102	26.6
Higher education	98	25.5
Religious		
Orthodox	290	75.5
Muslim	60	15.6
Other(catholic, protestant)	34	8.9
Occupation		
Government	104	27.1
Housewife	59	15.4
Private	87	22.7
Other(farmer, student)	134	34.9

Table 2: Knowledge of participants related to cause, mode of transmissions and host range of rabies in Debre Tabor Town (N=384), 2015.

Characteristics	Frequency/number	Percent
Awareness on rabies		
Yes	384	100
No	0	0.00
Part of the body affected by rabies		
Brain	175	45.6
Stomach	72	18.8
Bitten area	87	22.7
I don't know	50	13.0
Cause of rabies		
Virus	250	65.1
Bacteria	31	8.1
Protozoa	20	5.2
I don't know	83	21.6
Susceptible host for rabies		
Dog	270	70.3
Cat	10	2.6
Human	42	10.9
Equine	22	5.7
Bovine	4	1.0
Wild animal	36	9.4
Transmitted from animal to human		
Yes	350	91.1
No	34	8.9
Mode of transmission from rabid animal to other animal or human		
Biting	222	57.8
Saliva contact into open wound	116	30.2
Inhalation	30	7.8
Scratch	16	4.2
Most common source of rabies		
Dog	280	72.9
Bovine	6	1.6
Cat	22	5.7
Equine	40	10.4
Wild animal	16	4.2
I don't know	20	5.2

Table 3: Knowledge of participants related to clinical signs and fatal nature of rabies in Debre Tabor Town (N=384), 2015

Characteristics	Frequency	Percent
Clinical sign in animal		
Sudden behavioral change	56	14.6
Aggression	13	3.4
Hyper salivation	106	27.6
Water phobia	27	7.0
Paralysis	41	10.9
All	140	36.5
Clinical sign in human		
Madness	91	23.7
Water and light phobia	48	12.5
Paralysis	57	14.8
Puppy movement in the stomach	179	46.6
Hallucination	9	2.3
Fate of a person bitten by rabid animal		
He or she will die	245	63.8
He or she remain sick	59	15.4
Nothing happen	39	10.2
I don't know	41	10.7
Group of population at higher risk		
Young	81	21.1
Adult	15	3.9
Male	26	6.8
Female	25	6.5
All	237	61.7
Easily treated after onset of clinical sign		
Yes	250	65.1
No	234	34.9

Community KAP about Rabies in Debre Tabor: Thirty eight questions were asked for each respondent regarding cause, sources and mode of transmissions, clinical signs and prevention practices and treatment measures of rabies which was resulted in a response of either, choose the correct answer (had got one mark) or wrong answer (had got zero mark) for each question. The number of questions for which the respondent gave correct responses was counted and scored. This score was then pooled together and the mean score was computed to determine the overall KAP of respondents. Respondents who score greater than or equal to the mean value (Mean=15.97, SD=5.66) grouped to good KAP and less than the mean value grouped to poor KAP level. The data show that about 49.5% of the study participants were found to have good KAP about rabies and 50.5% were found to have poor KAP level.

Factors associated with community KAP on rabies in DebreTabor Town: Association between independent variables and KAP scores on rabies was assessed using Pearson's Chi square (Table 5). There was significantly association between KAP scores and age ($\chi^2= 8.001$, $p < 0.05$). The good scores were highest in the age group of 15-35 (44.7%) among other age groups. Educational status was significantly associated with KAP scores ($\chi^2=11.409$, $p < 0.05$). All respondents with first degree and above education levels had good KAP of rabies.

Table 4: Practices and attitudes to prevent rabies after suspected animal/dog bite in Debre Tabor Town (N=384), 2015

Characteristics	Frequency	Percent
Traditional healer couldn't be a solution of rabies		
Agree	150	39.1
Don't agree	156	40.6
Not sure	78	20.3
Eating roasted meat of an animal died of rabies could be medicine for rabies		
Agree	126	106
Don't agree	152	32.8
Not sure	39.6	27.6
Burning the rabid animal and inhalation the smoke could be medicine for rabies		
Agree	78	20.3
Don't agree	222	57.8
Not sure	84	21.9
Crossing a river before 40 days could prevent disease development		
Agree	90	23.4
Don't agree	202	52.6
Not sure	92	24.0
Immediate action after bitten by rabid animal		
Washing with water and soap	96	25.0
Visit health institution for treatment	144	37.5
Use traditional healer	114	29.7
Do nothing	14	3.6
Don't know	12	3.1
Post exposure prophylaxis prevent disease development		
Yes	182	47.4
No	79	20.6
Don't know	123	32.0
What kind of exposure needs vaccination		
Animal bite	196	51.0
Animal scratch	76	19.8
Animal lick	74	19.3
Other(touch, treat the dog)	38	9.9
Suturing is recommended during animal bite wound		
Yes	155	40.4
No	103	26.8
Don't know	126	32.8

Table 5: Relationships between KAP scores about rabies and some key independent variables among study respondents of Debre Tabor Town(N=384) 2015

Variables	Good	Poor	X ²	P-value
Sex				
Male	107(51.3%)	100(48.3%)	0.879	0.349
Female	83(43.7%)	94(48.5%)		
Age				
15-35	96(50.5%)	119(61.3%)	8.001	0.046
36-55	47(24.7%)	38(19.6%)		
56-75	36(18.9%)	34(17.5%)		
>75	11(5.8%)	3(1.5%)		
Educational status				
Illiterate people	18(9.5%)	20(10.3%)	11.409	0.022
Read and write only	27(14.2%)	23(11.9%)		
Primary school	38(20.0%)	58(29.9%)		
Secondary school	46(24.2%)	56(28.9%)		
Higher education	61(32.1%)	37(19.1%)		
Religious				
Orthodox	147(77.4%)	143(73.7%)	2.884	0.236
Muslim	24(12.6%)	36(18.6%)		
Other(catholic, protestant)	19(10.0%)	15(7.7%)		
Occupation				
Government	65(34.2%)	39(20.1%)	14.307	0.03
House wise	19(10.0%)	40(20.6%)		
Private	42(22.1%)	45(23.2%)		
Other(farmer, student)	64(33.7%)	70(36.1%)		

DISCUSSION

Rabies virus is generalist pathogen in nature as it has the ability to infect wide range of species and cause major host mortality or reduce fertility are unlikely to be able to persist. Rabies in dogs poses a threat to more than 3.3 billion people. It is estimated that 55,000 people die from dog-mediated rabies annually in Africa and Asia [3]. Rabies in Ethiopia is a neglected zoonotic disease but major public health problem especially in regions where stray dogs are ineffectively controlled. In reality people in developing countries, may not receive lifesaving treatments either because of people may not visit the hospital for treatment owing to lack individual's depth of rabies knowledge or, there is a lack of understanding in the response to dog bites, people may contact with local traditional healers for treatment or apply herbal medication on the dog bite wound, or perform folk remedies at home rather than treatment from health facilities [5-7].

All respondents in this study (100%) had heard about rabies from different sources from which (52.6%) of respondents receive information about rabies from mass media (formal source). However, such information tended to be superficial and it did not adequately enable public to acquire appropriate level of knowledge on rabies. This finding is higher when compared with that proportion (68.7%) in a survey of knowledge, attitudes and practices about animal bite and rabies in general community in India and in Zimbabwe, but KAP level in these countries is higher [13, 14]. This might be because of the fact associated with the source of information determining the appropriateness of the knowledge transferred. Of those respondents, 34.9% had misunderstanding on the cause of rabies. This result is lower when compared with the result obtained from study conducted in Gondar and Dabat, indicated that most of respondents believe that the disease in dogs is caused by starvation; thirst and prolonged exposure to sun heat [15]. This could be due to study area and community awareness difference. In the present study, 57.8% respondents knew the correct mode of transmission which is consistent with the finding in Delhi [16], who reported that 49.2% answered correctly concerning transmission. However, the study conducted in Addis Ababa [10] among the community indicated that higher proportion of study participants had correct response regarding the route of exposure compared to the result found in this study which could be due to better source of information. This KAP analysis revealed that 63.8% of respondents recognize rabies as danger and a fatal disease, 70.3% know that dogs are susceptible to

rabies and 72.9% aware that dogs are the most common source of rabies. This result is almost consistent with a study conducted in the city of New York, USA, reported that 94.1% of the study participants know rabies as a killer disease and 73.5% of the respondents identified that dogs are major sources for the spread of rabies in human populaion [17]. In this study, majority of the respondents (61.7%) know that rabies can affect all group of population. In my study about 36.5% of the respondents were aware of common clinical signs of rabies in animals. This finding is supported by study [18] which is done in Bahir Dar.

In the current study, 25% of the respondents know that wound washing is immediate action after dog bite. This result is highly lower than studies done in Bhutan with majority of respondents were aware that animal bite wounds should be washed with soap and water [19]. This difference might be due to respondents believed that the infection could be treated with herbs and traditional healer. Most respondents (37.5%) in my study visited medical care from health centers after being bitten by dogs, which is supported by study done in Sri Lanka almost all respondents agreed to consult health professional in case of animal bite [20]. This little different might be due to lack of information and unavailability of health centers in immediate vicinity. In contrast with India's surveyed population (42%) preferred household treatment such as chili application [14]. 29.7% participants of this study had strong belief on traditional medicine. The majority of the respondents indicated regular vaccination of dogs is effective measure for controlling the disease in Debre Tabor. This finding was not consistence with results recorded in Sir Lanka and Bahir Dar in which the majority of the participants were in favor of rabies control programs that mainly focused on stray dog population control [18, 21].

The findings of this study indicated that, about 49.5% of the respondents had good level of knowledge, attitude and practices about rabies. In contrast to this finding, higher knowledge, more positive attitudes and higher scores in practice indicators regarding rabies was reported from Sri Lanka [21]. This difference probably might be explained by the lack of health education programs about rabies in Ethiopia.

In this study the good KAP scores were highest in age group of 15-35 (50.5%) among other age groups of 36-55 (24.7%), 56-75 (18.9%) and >75 (5.8%). The statistically significant difference ($P < 0.046$) in KAP score among age groups might be due to increased reading capacity and eager to search new thing as being student about rabies.

The other factor that compared with age groups and better chance of acquiring identified to be significantly associated with knowledge on rabies was educational status. Statistically significant association ($P < 0.022$) was observed between KAP score and educational levels where by higher levels of educations were associated with higher knowledge scores. All respondents with first degree and above education levels had good KAP of rabies. The possible explanation could be educated person would have better information access and can easily understand the disease. This result is also supported by the result of the studies conducted in Flagstaff and Bahir Dar [18, 22].

CONCLUSION

This study has shown that the community level KAP about rabies is good in the study area, despite this fact, still there are some KAP gaps in the community regarding the modes of rabies transmission, clinical signs, prevention methods after suspected animal bite, first action taken in the home after bitten by a suspected animal and attitude to anti-rabies vaccine and traditional healer. Age, educational status and occupational status of the respondents were the variables found to be significantly associated with KAP on rabies.

Therefore, based on the above conclusion the following recommendations are forwarded:

- The Debretabor Health Office Administration should provide periodic education to raise community knowledge on rabies and provide accurate information targeted to people who have lower educational level, housewives or females more commonly present at home and small number of children in the household (limited social communication).
- The Amhara Regional Health Bureau should also design accurate and urgent Community based rabies education program with emphasis on mode of transmission, clinical signs and immediate benefits of wound management and need for Anti-rabies vaccine following dog bite.
- The Federal Ministry of Health and Ministry of Agriculture should work in cooperation with information sources like radio, television programs and newspapers to forward information related to rabies for enhancing the level of knowledge of the community about the deadly nature of the disease and the availability of preventive measures like vaccinations both for human and animals.

- Furthermore, the respective Federal Offices should increase the availability and distribution of vaccine in different health centers.

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